

What is Claimed is:

[c1] A semiconductor production reactor, comprising a reactor comprising at least one interior chamber surface primed to balance receipt of a to-be-controlled material.

[c2] The reactor of claim 1, wherein the primed interior chamber surface minimizes volatile compound or complex formation upon a to-be-controlled material contacting the interior chamber surface.

[c3] The reactor of claim 1, wherein the surface is primed to block an etching material.

[c4] The reactor of claim 3, wherein the blocked etching material is selected from the group consisting of fluorine, chlorine, oxygen, argon, bromine, fluorocarbons and chlorofluorocarbons.

[c5] The chamber of claim 1, wherein the primed interior surface includes a substance that binds with silicon and minimizes Si-F bonding.

[c6] The chamber of claim 1, wherein the primed interior surface includes a substance that minimizes formation of a volatile compound or complex.

[c7] The chamber of claim 1, wherein the primed interior surface includes a substance that minimizes SiF<sub>4</sub> formation.

[c8] The chamber of claim 1, wherein the chamber is silicon-based or silicon carbide based.

[c9] The chamber of claim 1, wherein the primed surface includes an equilibrium-shifting substance for impeding reaction between the chamber surface and the to-be-controlled material.

[c10] The chamber of claim 1, wherein the primed chamber surface includes cobalt-silicon bonds and/or cobalt-fluorine bonds.

[c11] The chamber of claim 1, comprising a cleaned and primed chamber surface.

[c12] The chamber of claim 1, including at least about 8 atom % cobalt in the primed surface.

[c13] A method of seasoning a reactor chamber, comprising at least the steps of:  
providing a reactor chamber having at least one interior surface;

priming the interior surface of the reactor chamber with a seasoning element or compound

containing seasoning atoms or molecules that when combined with the chamber surface and/or a material to be used in the reactor chamber are relatively less volatile than a combination, alone without the seasoning atoms or molecules, of the chamber surface and the material to be used in the reactor chamber.

[c14] The method of claim 13, wherein the surface-priming includes placing the seasoning element or compound in solid form in the reaction chamber.

[c15] The method of claim 13, wherein a cobalt-containing solid is placed in the chamber.

[c16] <sup>1</sup> <sub>2</sub> The method of claim 13, wherein the seasoning element or compound is selected from the group consisting of cobalt-based elements or compounds, aluminum-based elements or compounds, copper-based elements or compounds, titanium-based elements or compounds and silicon-based elements or compounds.

[c17] The seasoning method of claim 13, including periodic cleaning of the chamber.

[c18] An etching method, comprising:  
providing a reactor chamber having at least one interior surface;  
priming the interior surface of the reactor to minimize an undesirable reaction at the surface;  
producing an etched product in the primed reactor chamber

[c19] The etching method of claim 18, wherein the undesirable reaction is formation of a volatile compound or complex.

[c20] The etching method of claim 18, wherein the undesirable reaction is formation of SiF<sub>4</sub>.

[c21] The method of claim 18, wherein the interior surface after priming includes Si-Co and/or Co-F bonds.

[c22] The method of claim 18, including producing an oxide or oxynitride film or etching via holes.

[c23] The method of claim 18, including periodically cleaning the chamber.

[c24] A method of controlling fluorine in production processes in a reactor, comprising at least the steps of:

- priming an interior surface of the reaction chamber with seasoning atoms or molecules that reduce the formation of volatile compounds and complexes when fluorine encounters the surface;
- conducting a production process in the reactor in which fluorine is present in the reaction chamber.

[c25] The method of claim 24, wherein the production process includes etching.

[c26] The method of claim 24, further including periodic cleaning of the reaction chamber.

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